

9. *Observations on South African Onychophora*.—By G. E. HUTCHINSON, late of the Department of Zoology, University of the Witwatersrand, Johannesburg.

(With 1 Text-figure.)

THE following notes are based on material from two sources :

1. A collection made in various parts of the Cape Province in December 1926 and January 1927 (G. E. H.).

2. The hitherto unexamined material in the South African Museum (S.A.M.).

For the loan of the latter specimens and for help with literature I am much indebted to Dr. E. L. Gill, Dr. K. H. Barnard, and Mr. Lawrence. In addition to a description of a new species, notes of new localities and on variation and distribution are given.

(1) *Peripatopsis sedgwicki* Purc.

Coldstream (Humansdorp dist.), i. 1921 (S.A.M., R. W. Tucker coll. B 752).

Witte Els Bosch (Humansdorp dist.), 11, i. 1927 (G. E. H.).

(2) *Peripatopsis intermedia* n. sp.

Green, basal part of antenna unpigmented, some of the larger papillae on the dorsal surface paler; below largely pale, especially at the bases of the legs; posterior part of ventral surface fairly well pigmented.

About twelve irregular annuli per segment.

Large papilli obtusely subconical.

Eighteen pairs of pregenital legs and a much reduced genital pair; the right-hand genital leg clawed but apparently without a foot, as claws cannot be made out on the left-hand genital leg (in the type). First sixteen pairs of legs with well-developed coxal vesicles; these structures are rudimentary and slit-like in the last two pairs of pregenital legs (fig. 1). Median pad of foot just under twice as wide as the proximal (7 : 4).

No crural gland papillae enlarged (presumably ♀).

External lamina of mandible with one accessory denticle, internal lamina with five accessory denticles.

Length (in alcohol, contracted and curved) *ca.* 33 mm.

Seven miles E. of Montagu, xi. 1919 (S.A.M., R. W. Tucker coll. B 748. *Type*).

The single specimen described above represents a species superficially resembling *P. balfouri* Sedgw. both in the number of legs and in the armature of the genital pair (in part), but differing notably in the large coxal vesicles on the first sixteen pairs of legs. In this character it forms a link between those species in which coxal vesicles

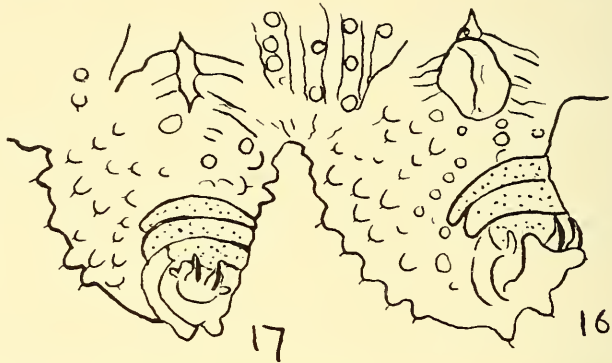


FIG. 1.—*Peripatopsis intermedia* n. sp. Sixteenth and seventeenth left legs, showing fully developed and rudimentary coxal vesicles.

are rudimentary or absent (*capensis* Grube, *clavigera* Purc., *leonina* Purc., and *balfouri* Sedgw.) and the more eastern and primitive group in which they are well developed (*sedgwicki* Purc., and *moseleyi* W.-M.). *P. intermedia* also differs from *balfouri* in its rather more deeply pigmented ventral surface.

Unfortunately the single, presumably female, specimen is in such a poor state of preservation that nothing can be made out of its internal anatomy. Its position in the genus is of sufficient interest to warrant this preliminary account, pending the discovery of better material.

(3) *Peripatopsis clavigera* Purc.

George. In a wooded bank about 2 miles along the Knysna road. 19, xii. 1926 (G. E. H.).

(4) *Peripatopsis balfouri* Sedgw.

Stellenbosch, Jonkers Hoek Valley, 22, i. 1914 (S.A.M., K. H. Barnard coll. B 743).

R. Zonde Ende, 1919 (S.A.M., K. H. Barnard coll.).

Wilderness (George dist.), 19, xii. 1926 (G. E. H.).

(5) *Peripatopsis capensis* Grube.

R. Zonde Ende, 1919 (S.A.M., K. H. Barnard coll.).

In 1901 Purcell (Ann. S. Afr. Mus., II, p. 99) described a series of specimens from Swellendam in which there were individuals with 18 as well as the normal 17 pairs of pregenital legs. We obtained near Swellendam five specimens of which two were of the 18-legged form, and I have examined yet another taken at the same place by Lawrence and Hesse. In the complete series from Swellendam (S.A.M., including Purcell and G. E. H.) there are eighteen specimens, and of these nine belong to the 18-legged variety. So far as I am aware, *P. capensis* has not been recorded east of Swellendam nor has the 18-legged form been noted elsewhere. It would be most interesting should the latter replace the type in the extreme eastern part of the range of *capensis*; the species should be searched for, e.g. at Riversdale. Purcell's specimens are unfortunately now somewhat faded, but when the series as a whole is considered, it is evident that the brown forms at Swellendam tend to be of the 18-legged variety, the black of the 17-legged type form.

	17-legged.	18-legged.
Brown with dark bands—		
Purcell types 2 to 3	6
Intermediate—		
Purcell types 3 to 4 . . .	1	3
Greenish-black—		
Purcell type 4 . . .	8	..

Zoogeographical Remarks.

The primitive element in the Cape fauna has been the subject of innumerable comments since the discovery of *Peripatopsis capensis*, but its exact nature is not entirely clear, nor can it be so till greater unanimity is reached as to the geological history of the Southern

Hemisphere. Meanwhile certain tentative inferences may be drawn. There is a primitive element in the fauna presumably comparable to the Bushman and Hottentot peoples, *i.e.* early invaders from the North, and in the northern and eastern parts of South Africa replaced by newer forms. This element is ably discussed by Hewitt in a recent publication (S. Afr. Journ. Sci., xx, 1923, p. 96), in which it is shown that, as we proceed southward and westward from northern centres of distribution, we meet more primitive forms. Most zoogeographers, however, have believed that certain groups, and the *Peripatopsidae* are a conspicuous example, represent the remains of an ancient fauna formerly inhabiting an antarctic or subantarctic land-mass. Such groups would have been distributed from the South, and we find that they show their greatest abundance of species in the Cape Peninsula and adjacent mainland. By analogy with the groups distributed from the North, we might expect these relict groups to have their most primitive representatives in the north-eastern part of their range, and this seems actually to be the case with *Peripatopsis*. *P. moseleyi* and *P. sedgwicki* are regarded by Bouvier as the most primitive species of the genus and are the most eastern, while the most specialised *P. capensis* is one of the western group. The other species are distributed in various parts of the West Province and obey no rule, but it should be noted that the Cape Peninsula has three species (*capensis*, *balfouri*, *leonina*), more than any other locality so far examined (*balfouri*, *sedgwicki*, and *clavigera* may all occur in Knysna forest). *P. capensis* again seems to obey a similar law in its variation, for the more primitive 18-legged form is found only at the eastern extremity of its range. A somewhat similar case in the acanthodriline earthworms has recently been noted by Pickford (Rec. Albany Mus., iii, p. 452, 1927). Other animal groups with a like distribution are hardly big enough to show the phenomenon, and I am not aware that it has so far been found among plants.